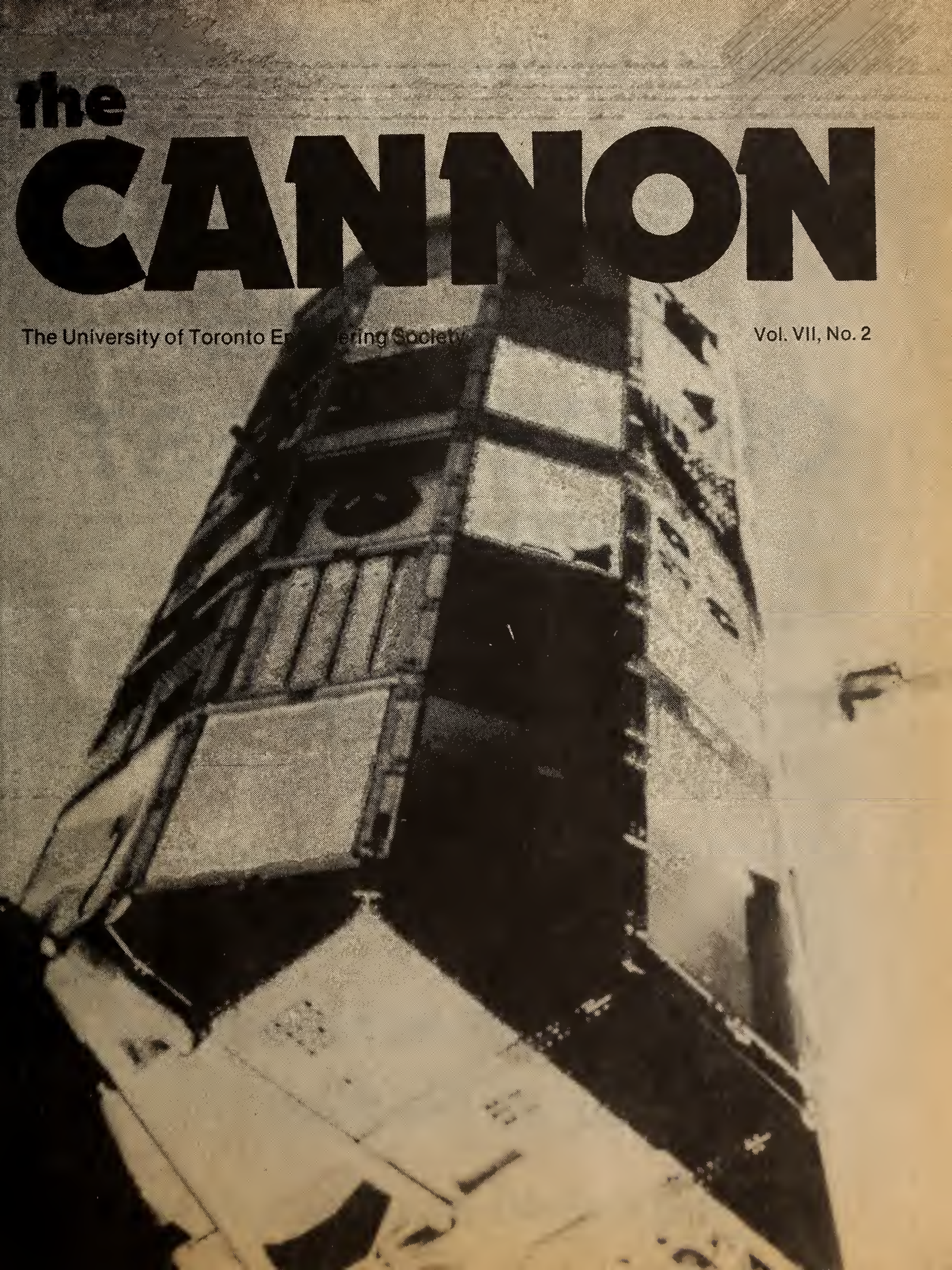
the CANNON

The University of Toronto Engineering Society

Vol. VII, No. 2



The U of T Engineering Society Presents

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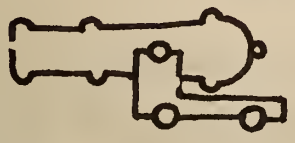

the CANNON

U of T Engineering Society

Vol. VII, No. 2

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THE CANNON is a publication of the University of Toronto Engineering Society. it is published monthly to announce Eng Soc events, discuss faculty and university matters, and present technical information of interest to Engineering undergraduates. Subscriptions are available, call Ella at 978—2917. Anyone interested in helping with *THE CANNON* is most welcome.

THE CANNON encourages submissions; please type or write legibly. Deadline for articles and letters for the next issue is Monday, October 29. Comments on *THE CANNON* or articles appearing in it are appreciated. The editor reserves the right to edit for brevity.

ISSN 0711-4370

Skule Centennial
The year is 1885: the birth of our Society. A recent grad talks about the founding and early uears of the Engineering Society. Also, the centennial quiz will be administered at the end of the article.

page 6

Do you remember: Orientation?

Frosh, remember those $¢¡& guys who forced you to do all those weird things first day? Well, to refresh your memory, here is a collection of photos and comments by a fellow first year.

page 10

Report on Engineering Design
The University of Toronto has entered the race to develop composites sturdy enough to last in space and low earth orbit.

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Riding into glory
One of the centennial events is the construction of a bicycle that will break all speed records for human powered vehicles. Here is a status report.

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He's happy, he's jolly...
Meet Peter Kurpis, your new Vice-President Administration.

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Deployment of NASA's Long Duration Exposure Facility.

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Editor's Comments

September is now over, and midterms are about to start. Such pleasant news. Are you ready or do you have a T.A. that you can't seem to understand or worse, who can't understand you? By now you probably have conversed with your classmates and irrevocably decided that this T.A. is out to screw you and has no conception of reality. This phenomenum is known as "bashing". We are all guilty of this habit. And such an easy habit it is, after all isn't it easier to agree with an ally than to sit down with an apparent enemy and talk rationally about the problem.

Engineers are not alone in bashing, but, when we are bashed, how affronted we get. "How can they do that to us? After all, we're the leaders of campus spirit." Now fasten your mental seatbelts, the $64,000 dollar question is, how is this spirit generated? Usually by insulting the other people on campus, witness the "Ball and Chain" cheer and several verses in Godiva's Hymn. So why are we so shocked when we receive a taste of our own medicine? After all, the "Spot the Engineer" cartoon in the September 22 *Varsity* is not half as demeaning as the strip "101 uses for an ARTSCI" printed in last year's *Golden Words*, the Queen's engineering humour/serious newspaper. That doesn't enter the problem though, does it?

How about those lice up at SAC eh? Complaining about that silly draft tap. In this case, both parties are to blame. SAC made the initial error in leaving a first floor window, Bob Jones', undone the night of our Scavenger Hunt which they had known about. An ingenious frosh team entered the building and took the tap as their original item. It was felt amongst myself and other seniors that SAC should pay for its negligence. Consequently, SAC was offered a ransom of $200 to be paid to Shinerama. Well and good. However, SAC is not predisposed towards Engineering, and approached the problem from a legal point of view: the Eng Soc and the BFC stole their tap. This position was not appreciated, so the tap was returned by chaining it 3 feet off the ground. The final repercusions are yet to be felt.

In both these examples, cooperation was not attempted. It was immediately assumed that the opposing party would be obstinate and, therefore, not worth talking to. Bashing is unfortunate as people usually live up to others expectations. In this modern world, the engineer is more and more dependant on the artsman and the scientist. The engineer is demanding that he be treated as a full professional. To gain that status, codes of ethics must be implemented and enforced. But what is the use of a code of ethics if we have conditioned ourselves to think artsmen are beneath our dignity. And seeing how the artsmen control our society (like it or not), what is the chance that they will accord the status of professional to a bunch of "beer-drinking partyers"?

Co-operation is a nice word. So are discussion, information, acceptance, and fraternization. And they are all antinyms for "bashing". Good luck studying.

Letters to the Editor

I remember September 1980 clearly, for it was my first contact with engineering, and the impression that was created, especially during Orientation Week, gave me no reason to dispute the status of semi-professional. The emphasis in the Frosh 'training' was on the perpeutation of an image: that Skulemen were the highest achievers in academics, as well as in less praiseworthy habits. A lot of time, and a lot of money was spent in trying to prove this Image, to themselves and to the whole campus. The most commendable task undertaken was Shinerama, which engineers and nurses are deservingly well noted for supporting. In four short years, we've come a long way, and one can only guess what the students of 1988 will see. A great deal of the changes were due in part to energetic and innovative changes supported by the engineering students themselves: the $100 special fee, increasing the liason with alumni, and taking the time to demonstrate to the Faculty and others what can be done to Inprove conditions, especially the computer facilities. This year, the President of Eng. Soc., Bill Hollings, has stressed improvement of the 'image' that others have of engineering, and engineering students, a commendable goal, for there's a course in fourth year Electrical, ELE 449F, called 'Engineering as a Profession', where they discuss why society does not yet consider engineers to be fully professional...

Thus, a suggestion: to help improve our image, on-campus and off, let's tackle a few more social problems, help others around us, as engineers are expected to do in soclety. For example, we could do our own

study of wheelchair accessibility on campus and finance improvements; or, we could promote a program of educating laymen, especially senior citizens, about this rapidly changing world of technology we have created.

Let's have more of the real image, and less imagination...

George Barnett
Eng Sci 8T5

The centenary of the Engineering Society which falls this year is a good occasion to reflect on where we are coming from and what our future direction as an organization would be. What started out as a technically oriented group of young WASP men at Ontario's top university is now much more than that.

Some things never change: as they say, "plus ça change. plus c'est la meme chose." Toronto is still number one, and the engineers are still among the most spirited groups on campus. On the other hand, the anonymous francophone's clever line doesn't quite apply in several important respects Now the Engineering Society is an incorporated body, and a century ago when the first woman registered at the U of T, no one seems to have foreseen the abundance of Skule™women today. The Eng Soc has matured, evolved, grown in the breadth and richness of its activities and traditions. All full time undergraduate engineering students are members, and have reason to be proud of their Society.

Curiously, the fact that the Eng Soc works so well is sometimes in spite of rather than thanks to some of its institutions. Putting it another way, we work better in practice than we do on paper. Fortunately other engineering problems are not that way around, or we'd lose the profession's raison d'etre (and our jobs!). What is perhaps the core institution of any organization — the constitution — is a case in point, and it is the deficiencies of that document specifically that I wish to address here. Proposed amendments to 'By-Law No 1 of the University of Toronto Engineering Society' are considered issue by issue. They were written upon careful study of the document as it stands, and then referred privately to knowledgeable contacts in Simcoe Hall and elsewhere to verify their validity. The verification process is still underyway. To be incorporated into the By-law, the amendments must be adopted by the membership of the Society assembled at a General Meeting, and it some cases approved by Simcoe Hall. A meeting should take place as soon as possible to consider these and any other changes, to give the Engineering Society a clean start into its second century.

It seems particularly appropriate to correct this oversight on the centenary of the admission of women to the University. Indeed it is very surprising that there is any problem at all in the area, but here it is: when speaking of human beings, English forces references to be made in one or the other gender. By convention, the masculine is used when both are included, and sure enough most of the By-Law is written in this manner. However, there are several references of the form 'he/she' or 'him/her', which would imply that the masculine - only references refere - exlusively to the masculine. In other words, the By-Law may be interpreted as excluding women from participation in the Engineering Society. There are three possible remedies to the situation: one would be to change everything to the 'he/she' form, which is very awkward; another would be to change the exceptions to the masculine and fall back on convention; the third would be to use the masculine but reaffirm the status of women by a positive statement that removes any ambiguity about the meaning of the references. The SAC constitution favours the third approach, and so do I.

Present rules make it impossible to remove an officer should need arise. First a quarter of the membership must sign a petition requesting a General Meeting for that purpose. Second, one half of all members — about fourteen hundred students — must attend the meeting, and two thirds of those present must vote in favour of dismissal. The middle step, ie obtaining quorum at the meeting, cannot realistically be achieved. The Eng Soc has simply grown too large. As for elections, a referendum format is needed. At the same time, the requirements should be lowered somewhat, but not to the point that officers would have to fear removal as a result of petty politicing. Removal of an officer must remain an action of last resort, to be invoked only in very serious circumstances.

Remember that the Eng Soc belongs to all of us in Engineering, and so we all have a stake in its future. The institutions of the Society exist because we or our predecessors created them. It is not an exclusive club with which only class representatives who sit on Council should be concerned. Council itself is a creature of the Society, not the other way around. It is the general membership of the organization that pays the annual fees (like them or not), and is constitutionally responsible for setting the ground rules by which Council and its committees operate. Hence I urge all students to take an interest in the amending process.

Nick Bilaniuk
Eng Sci 8T5

Centennial review

Barry Levine
SPS 8T4

The year 1984-1985 marks the one hundredth birthday of Canada's oldest Engineering Society, The University of Toronto Engineering Society. By now, every undergraduate should have received a button proclaiming this historic event. The purpose of this article is to introduce the first in a series of "centennial quizzes" for this year and to promote the upcoming hard-cover (hopefully) book celebrating the Society's centennial. Since I have spent most of this past summer researching the history of the Society for this book, I am armed with enough little-known trivia to stump even the clever history buffs out there. So if you thought last year's quizzes were a challenge...In order that I don't scare off any potential entrants, most of the answers can be obtained simply be keeping your eyes and ears open. Chances are, several hints may be buried within this very article. Chances are also good that at least one answer is known only to myself, in which case bribery may be the only solution. So good luck and have fun. I know that I am.

The Society was proposed over a dinner at the home of T. Kennard Thomson in November of 1884 by Thomson himself. Professor John Galbraith, who was in attendance, heartily endorsed the proposal, and the Engineering Society of the School of Practical Science was launched. Galbraith held the presidency until the first student president, H.E.T. Haultain was elected for the 1888-89 term.

Although meetings of the Society were typically to present and discuss technical papers, students had their fair share of revelry. The caretaker at School in the late 1880's, "Prof." Graham, was traditionally presented with a Christmas present by the students, "and on one such occasion he was presented with a greased pig, which he was forced to pursue through the building for some time, much to the amusement of the onlookers." (*Transactions and Yearbook*,1922)

The Engineering Library was formed in 1888. Soon it began to sell drafting paper and other supplies to students at cost. When the faculty assumed responsibility of the library, the Society continued the sale of supplies through the Supply Department, today known as the Engineering Stores (hi, Juney!).

Despite a bit of confusion in last year's quizzes concerning the founding of the *Toike Oike* newspaper, it has been confirmed that the *Toike* first appeared in March, 1911, as an election flyer. It continued as an election flyer until WWI, at which time it was forgotten (almost). Not wanting to let the campus down, the Engineering Society revived it in 1920. Its appearance coincided with important events, and contained informative articles and the occasional dry humour. The first *Toike* of so-called poor taste appeared in October 1930. By today's standards it was tame. The editor was expelled for his efforts. In the 40's, the *Toike Oike* became a serious contender (more like replacement, substitute) to *the Varsity*, which was viewed in much the same way as it is today ('nuf said). By the 50's, humour infiltrated the *Toike* to a much larger extent. In 1963, *the Varsity* was spoofed twice (an easy target) and has since been spoofed several times.

Derived from the School of Practical Science, the engineering faculty was often called "School". In 1943, the programme for School Nite contained the unusual spelling of School, S-K-U-L-E. This spelling was used interchangably along with School for several years, as the controversy surrounding the use of the new word grew. Many felt that the use of 'Skule' demonstrated a lack of respect for the Faculty. Printed below is an editorial from *the Toike Oike*, January, 1952:

School or Skule? Whichever way you pronounce the composite letters by fundamental phonetics it doesn't come out to what you're trying to say. And yet there seems to be a fairly hot controversy in some quarters as to which wat it should be spelled! It seems there's the "old school", and the "new skule". The former considers the latter as consisting of a group of frivolous young whippersnappers who don't realize the true dignity of our Faculty or give it due respect. The latter regards the former as a group of stagnant old die-hards who just can't keep up with the modern trend of abbreviations and simplifications.

Frankly we haven't a great deal of choice between the two. We have settled down to using "School" when writing formally or about fairly formal events, but employ the spelling "Skule" on informal occasions. Since we are more inclined to be informal than formal, however, it may sometimes appear that we are aware of only one spelling.

There are, we feel, things to be said for and against both points of view. In the first place we might point out to the Schoolers that they are being rather cosmopolitan —

truly the Oxford dictionary has never heard of the term "Skule," but it is unique. There are any number of "schools" whether spelt with a capital or not, but there is only one "Skule," and wherever a Toronto Engineering grad in days to come finds this word appearing, he can look for a fellow SPS man and talk over old times through two mugs of ale.

In the past, some people have sneered at the illiteracy of "Skule" and have said it merely reflects on the calibre of education received in our Faculty. However, the success of our graduates and the great contributions they are making in the world about us has long since made this comment appear at best ridiculous; "Skule" is now accepted as a symbol on our own campus. This symbol is not derogatory in the least except in a joking way in interfaculty battles. "Skule," if treated properly, will stand for all and more than the old "School" did. It will carry the tradition and dignity of the older term and will embody all that our Faculty stands for. Just as the word "Tungsten" has been replaced with no loss of dignity to the element, so "Skule" may be substituted for "School" and no one need feel too perturbed about it.

The present "Skule" may of course prove just a fad, but we have a sneaking suspicion it's here to stay. As we said before, we haven't really much preference and we will gladly follow whichever path finally becomes the highway.

In order that I don't lose any more readers, I'll end the history lesson here and get on with the quiz. Hopefully, more history can be presented in future issues of *the Cannon*. To get you off to an easy start, the first five questions will be presented as multiple choice questions.

Centennial quiz

1. The Engineering Stores, previously known as the Supply Department sells supplies at reasonable cost to the students. Which Engineering Society president could be credited with the founding of the Stores?
   a) John Galbraith
   b) T. Kennard Thomson
   c) Bill Hollings
   d) H.E.T. Haultain
   e) T.R. Rosebrugh

2. What was the original name of Skule™ Nite?
   a) School Nite
   b) School Night
   c) Skule Nite
   d) Stunt Night
   e) Ngynyrs in SPaSms

3. In 1975, the cannon was defaced by the cannoneer. As a sign of protest, the cannon guard switched to black hard hats. What colour were their hardhats previous to this time?
   a) yellow
   b) red
   c) blue
   d) green
   e) white

4. The original auctions of School were used to raise money and awareness of which event?
   a) School Dinner
   b) Skule Nite
   c) Cannonball
   d) Elections
   e) Godiva Week

5. Which two of the following books were published to help commemorate the Faculty's centennial in 1972-1973?
   a) Cold Iron and Lady Godiva
   b) One Hundred Years at S.P.S.
   c) The Next Hundred Years
   d) Early Engineering Education at Toronto
   e) Transactions and Yearbook

6. Which person in question one was neither president nor vice-president of the Society?

7. What is the date of the Centennial Pub?

8. Which prominent figurehead around the turn of the century at the School of Practical Science as known by the students as "Johnnie"?

9. What is the theme of this year's CCES conference to be held in Toronto?

10. What year was the School Yell (*Toike Oike, Toike Oike, Ollum te chollum te chay...*) Introduced?

Engineering Society News:

Shinerama

Orientation Day. To some it seems so long ago. I'd like to access some of your memory right now. Get the stuff you've labelled Shinerama.

Maybe you remember the sandwiches, or the rubbie who gave you the quarter, or the crazy Shinerama committee putting on their skits at Con Hall. Hopefully you remember Shinerama with a smile. And now folks, here are the long awaited results...

The premier presentation of the Shinerama Spirit Award went to Dave Close and his Group H team. Dave's amazing team showed true engineering spirit, staying out till 4:30 pm Shinerama Day. To clinch the award, Dave's team came out and shone the shoes of office workers at the Shinerama Bedrace. Incidently, the Bedrace was won by Civil Engineering for the second year in a row.

The first annual Shinerama Hot Dog Eating Contest was a big success. The members of the winning team were Dave Close and Henry Wong who, blindfolded were able to feed each other and devour 13 hot dogs in 5 minutes. Amazing!

Almost all Shinerama money has been recieved, and the amount we raised is higher than any previous year. From all the events staged by the Shinerama Committee - Shinerama Day, the Bedrace, the volleyball game, and the Hot Dog Day at U of T—we were able to raise over twelve thousand dollars! Quite an achievement, especially considering that most of our shiners shone for only two and one half hours.

Plans are already being made for next year's Shinerama. In January, a presentation will be made to COPOUT (Council of Presidents of the Univeristy of Toronto), in order to get Shinerama into the orientation activites of all frosh at the U of T. This meeting shoud clear up the other colleges' confusion and reluctance to get involved.

In closing, I would like to thank my co-chairman Miriam Gotlieb and my Shinerama such a great success. We did an excellant job, and it was a pleasure working and playing with you. Here's to a successful campaign next year.

Chris Harris

Secretary

Yes, the Engineering Society Computer bulletin board is now indeed working. For those of you who missed the instruction that went flying past your screen on how to recieve Eng. Soc. messages, here they are:

```
% ed .msgsrc
* a
skule:1 (no tm)

* w
* q
```

All Engineering Society messages will then automatically be displayed when you login. Now wasn't that easy?! If you have any questions about the events or the Eng. Soc. in general, just:

```
% mail engsoc
```

Hope to be hearing from you.

Suzanne Rochford

Blue and Gold

As you all know (we hope), the Homecoming parade is on October 20th. The usual routine for this event is constructing a float, parading it, geting it judged, and, for the past two years, winning the competition. The design for this years float has been suggested,so what we need is help in constructing it. Keep your ears open and listen for times and dates when you can help.

Franco Minatel

By-Law Review

There will be a meeting of the brand-new By-law Review Committee at 5:00, Thursday, Oct. 4. in the Engineering Society. We are in the process of reviewing and updating the Engineering Society's Constitution (By-Law no. 1). If you are interested in inputting ideas for changes, come out and make your ideas known. If the Feds can do it, then so can we!

Peter Kurpis

UTCSCE

The University of Toronto Student Section of the Canadian Society for Civil Engineering (UTCSCE Club for short) welcomes all Civil Engineering students to what promises to be a very eventful year.

For those who are unfamiliar with the Canadian Society for Civil Engineering, the CSCE is a professional organization which represents civil engineers, civil engineering technologists, and civil engineering students across Canada. This student chapter is an organization with aims to promote professionalism within the Faculty.

The UTCSCE Club has a number of events planned for this year which we hope will be of interest to you. First of all we will be hosting several smokers, two of which will be co-hosted

by the Civil Club. In addition, we are planning to hold a number of lunch-hour events during which time there will be guest speakers and/or movies presented.

Ray Bacquie

Skule™ Nite

Skule™Nite 8T5, the Engineering musical-comedy revue needs a lighting designer and a set construction coordinator. If you are interested, please leave your name and number in the Skule ™ Nite mailbox (in the Eng. Soc.), or call Lee VerHoeff (producer) at 534-0564 or Steve Roberts(director) at 444-1939. Thanks.

Steve Roberts

THE CENTENNIAL COMMITTEE NEEDS YOU!

meetings every monday at 5 pm in the Metallurgy common room

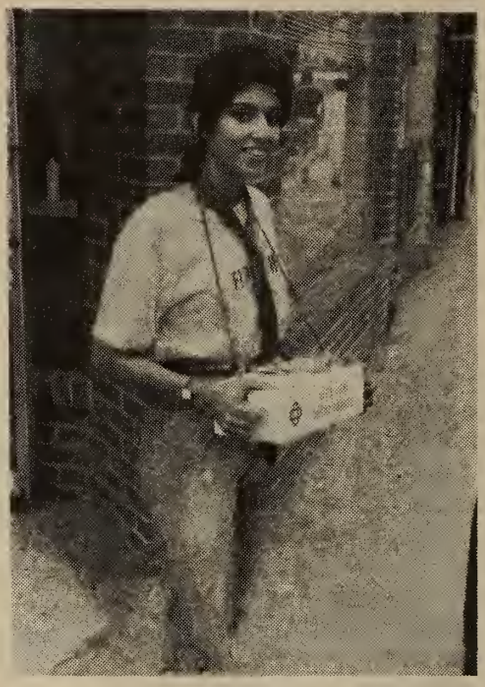
AND

THE SKULE™CYCLE STILL NEEDS VOLUNTEERS

come out after 3 pm fridays to WB143

Orientation Spread

CAN'T REMEMBER. THAT STUDENT NUMBER! HATED(??) THOSE PUSH-UPS.

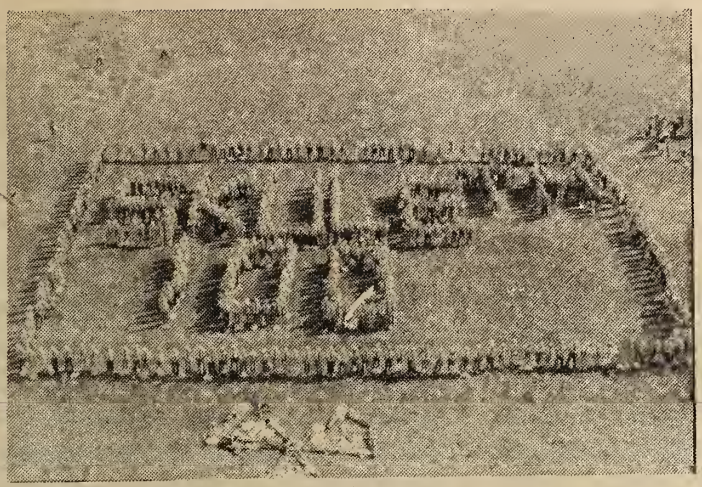


STANDING ON A STREET CORNER DEALING WITH STRANGE LOOKS, REJECTION, AND HUNGER.

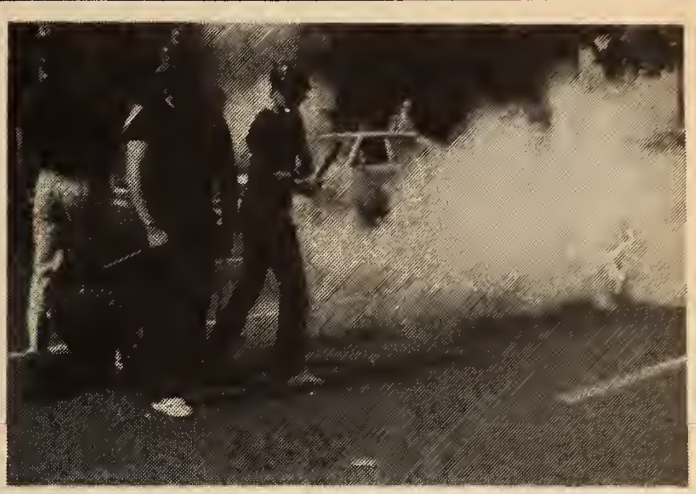
THE OATH OF DEDICATION TO SKULE, LATE NIGHTS AND MANY CASES OF BEER.

THE ASSAULT ON SAC BY SEVERAL HUNDRED CRAZED ENGINEERS WISHING TO SHOW THEIR SUPERIORITY.

THAT PURPLE DYE THAT MATCHED YOUR SHIRT AND TIE SO WELL.



OUR CONTRIBUTION TO OUR SKULE'S CENTENNIAL.



THE MIGHTY CANNON FELLS AN ARCH-ENEMY - VUSAC.

THE NURSES HAVE A GOOD TIME BEFORE CLOAK AND DAGGER NIGHT'S NURSE-WETTING.

AN UNSUSPECTING UPPERCLASSMAN IS ABOUT TO BE SOAKED.

AN UPPERCLASSMAN GETS AN ICE-BATH IN REVENGE.

REVENGE, BEER, SWIMMING AND ANTICS AT THE FARM.

C. McMunn

CRAIG MCMUNN CIVIL 8T8

SKULE™ IN SPACE

Edward Da Silva
MMS 8T5

Gus Rinella
MMS8T5

As you are reading this, NASA is preparing to launch the second experiment developed by Engineering Science chairman R.C. Tennyson and his associates at the University of Toronto Institute for Aerospace Studies. The purpose of this experiment is to determine the flux of atomic oxygen in low earth orbit (150-300 miles) so that earth-bound simulators can more closely approximate this environment. The earlier experiment has been in orbit since April 4, 1984 on board NASA's Long Duration Exposure Facility (L.D.E.F.). It will produce polymer specimens that will be used in reference standards for further degradation experiments.

The data acquired will be used in the Aerospace Institutes radiation space simulator. This device is unique in that it is able to mimic the simultaneous effects of high ultraviolet radiation levels, high energy electrons, vacuum and monatomic oxygen. The ultraviolet radiation is produced by ultraviolet lamps. A thin film of Sr90 serves as a high energy electron source. The production of atomic energy is more complicated. A mixture of He and 8-10% oxygen is passed through a microwave source. The energy in the microwave dissociates approximately 3% of the oxygen which is carried into the chamber by the He. He is used because of its inertness and stability. Previous tests have shown that the first three factors are accurately simulated. The data from this latest experiment will calibrate the final factor to represent the conditions in space.

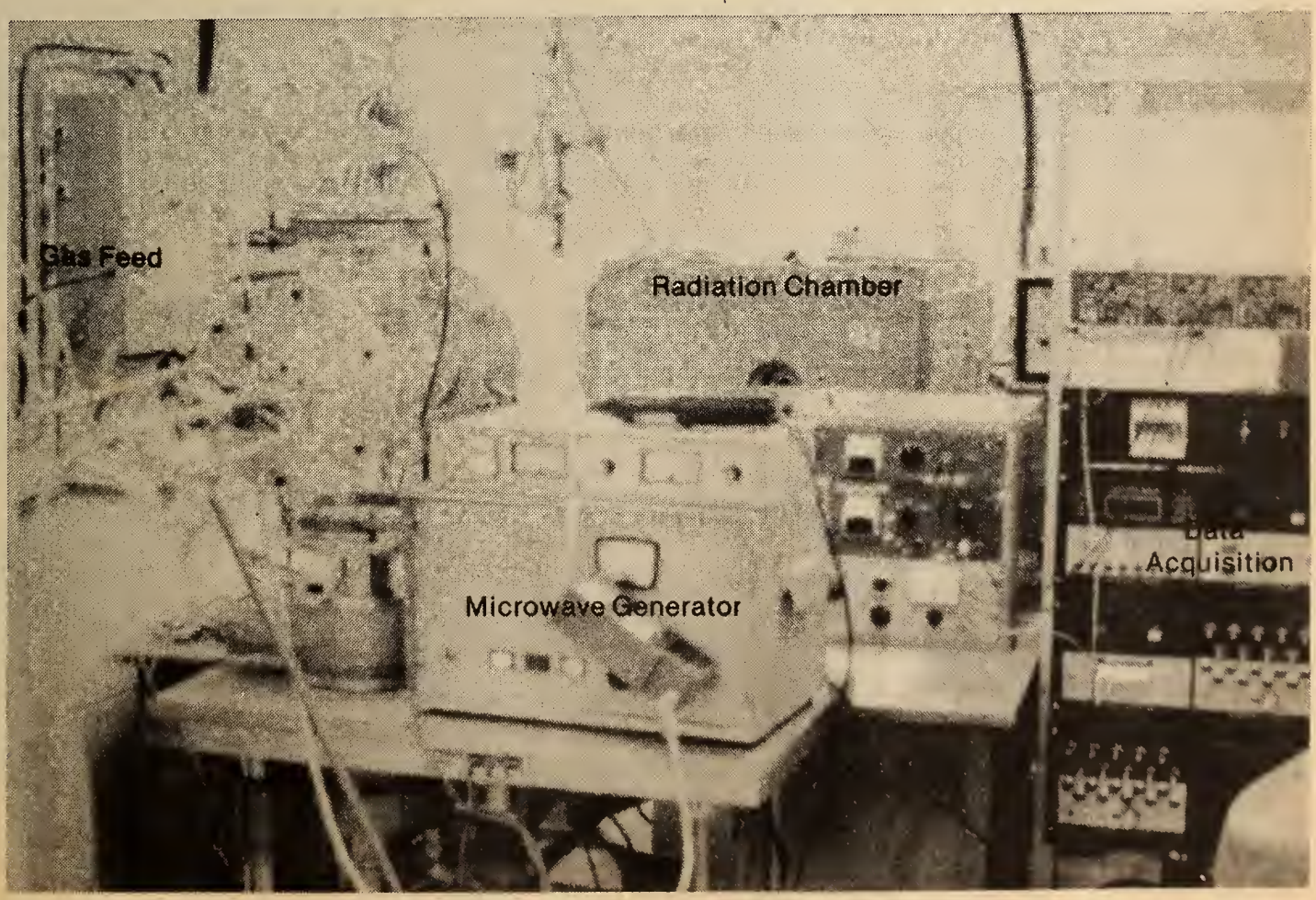
For those unfamiliar with the effects of the four factors on polymers, we will describe each in some detail. The nature of the bonds between the atoms of the polymer are such that a sufficiently hard vacuum is able to remove these atoms from the surface. The process is known as outgassing, It is detrimental to the performance of spacecraft in two ways: the polymer is weakened and the rest of the vehicle may get fouled by the outgassed product. Ionizing radiation causes changes to the polymer's structure. The degree to which chains of atoms are interlinked is altered by the radiation. An increase in the crosslinking of the chains will increase the strength of the polymer at the expense of its ductility. In other words, the plastic may become more brittle as the chains are no longer able to slide past one another. In some polymeric materials, existing crosslinks may be destroyed with an adverse decrease in strength. Neither occurence is desirable.

The effect of monatomic oxygen is analogous to a corrosion process, as erosion is not a large factor. Mechanical abrasion has been ruled out, as the speed of the impinging atoms does not affect the process. The flux of oxygen has been identified as the major factor as an increase in this would provide a larger number of reactiong species at the surface. The extreme reactivity of monatomic oxygen can be illustrated by an experiment performed on Kapton (a commercial polymer). In just 8 days of space exposure it lost nearly 40% of its initial mass. Most of this loss is attributed to the oxygen attack as outgassing is known to produce a maximum 15% decrease.

The importance of determining the oxygen flux may be illustrated by NASA's devoting 31hours of an 8-day mission to this experiment, and the cooperation of the Jet Propulsion Laboratory in developing instrumentation for the test. The flux meter developed by JPL is an

example of how relatively simple mechanisns can be used to make apparently complex measurements. The flus meter consists of a layer of graphite-reinforced polymer attached to a curved metallic strip. Its principle of operation takes advantage of the fact that the rate at which atomic oxygen attacks the polymer is orders of mangitude greater than the attack rate on metals. Thus, the metal substrate will be revealed as the attack proceeds. The amount of metal visible at a give time is proportional to the flux. The data will be recorded by photographing the fluxmeter hourly and determining the amount of visible metal. Canadian content is ensured on this mission by having our first astronaut, Pierre Garneau (an engineer himself), take the snapshots. Measurements will be conducted so that the maximum flux is determined. This will be accomplished by maneuvering the Canadarm, so that the experiment is in a plane normal to the shuttle's flight path at all times.

These results will be incorporated in the Institute's radiation space simulator so that expensive in-flight testing can be done cheaply and conveniently in Toronto.



Radiation Space Simulator at Aerospace Institute

Skule^{TM}cycle

Gus Rinella
MMS 8T5

The Skule^{TM}cycle is the name recently given to the Centennial Design Project of the University of Toronto Engineering Society. It is a two person three wheeled vehicle that will attempt to break the existing world record of 62.92 mph (101.26 km/h) for human powered vehicles. The Centennial Design Project has two objectives in addition to achieving a new world mark:

1. To demonstrate the technical and organizational abilities of Engineering undergraduates at the University of Toronto.
2. To attract media attention to the Centennial of the Engineering Society.

In order to illustrate the high degree of technical merit of a successful attempt, I would like to point out that the existing record was set in 1980 and has remained despite organized speed trials held annually by the International Human Powered Vehicle Association (IHPVA) - Scientific American even ran their December 1983 cover story on this type of vehicle.

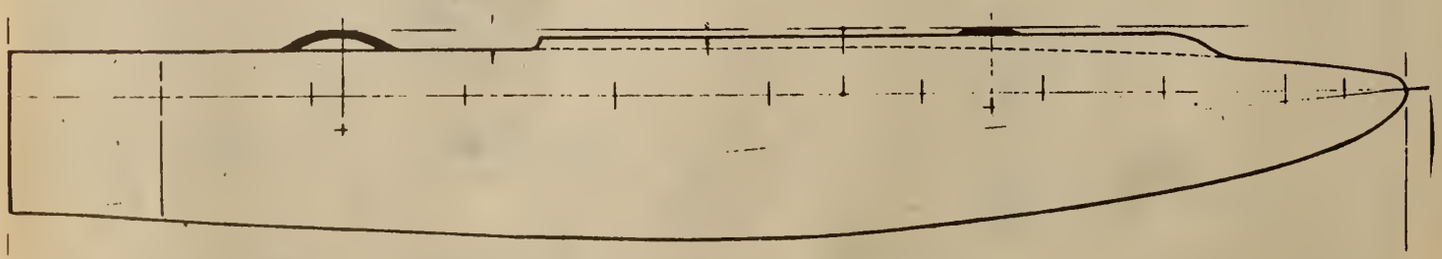
Two areas of improvement were identified by the Skule^{TM}cycle design team:

1. Drag reduction by minimizing frontal area and control of ground effects.
2. Optimization of the human "engine".

Achieving the first goal was done by redesigning the drive system of the vehicle and designing skirts for the body. The drive for the present record holder, the tandem Vector, was based upon the common rotary chain drive found on bicycles. The envelope required to house the crankset and the front rider's feet was found to place detrimental constraints on the shape of the streamlined body. In order to overcome these restrictions, a reciprocating drive system was adapted wherein the feet of the riders would go back and forth in a much smaller envelope. The result was a reduction in the frontal area from Vector's 0.44m^2 to 0.334m^2 and a reduction in the drag coefficient from 0.13 (Vector) to 0.105. Calculations were done assuming the same power input by the riders and equal mechanical efficiencies, and these showed that the Skule^{TM}cycle could achieve a speed of 73.9 mph (118.93 km/h) an increase of 17.5 over the world record.

The control of ground effects is important to the project not just from the point of view of minimizing drag but from a control standpoint. Film of Vector and published accounts

External Shell

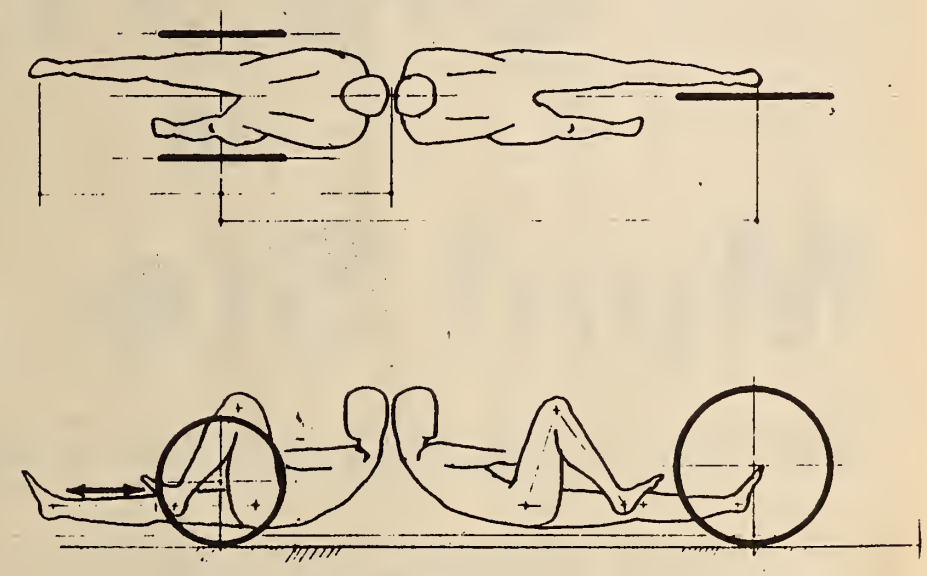


© Wm. K. Bolton

tell of its ability to leap sideways while travelling at high speed. This indicates a lack of downforce being developed by the body shell. The wideskirts on the Skule™cycle provide much of the required downforce.

At this time further work in drag reduction is being carried out as well as the design of an aerodymanic ductwork that will pass cool air over the hard-pressed riders. This is just one effort being taken to improve our "engine's" performance. Team Skule™cycle has been hard at work designing and fabricating a steel chassis that will be used to develop the drive system to its tullest potential and will in turn be used to train the riders to their fullest potential. The design and construction of the final chassis is awaiting the data from the drive system tests.

G.A. of Internal Layout



Riders:

The two riders power the vehicle through pedals on horizontal tracks (linear motion). Rear rider also pedals with arms. Front rider responsible for steering.

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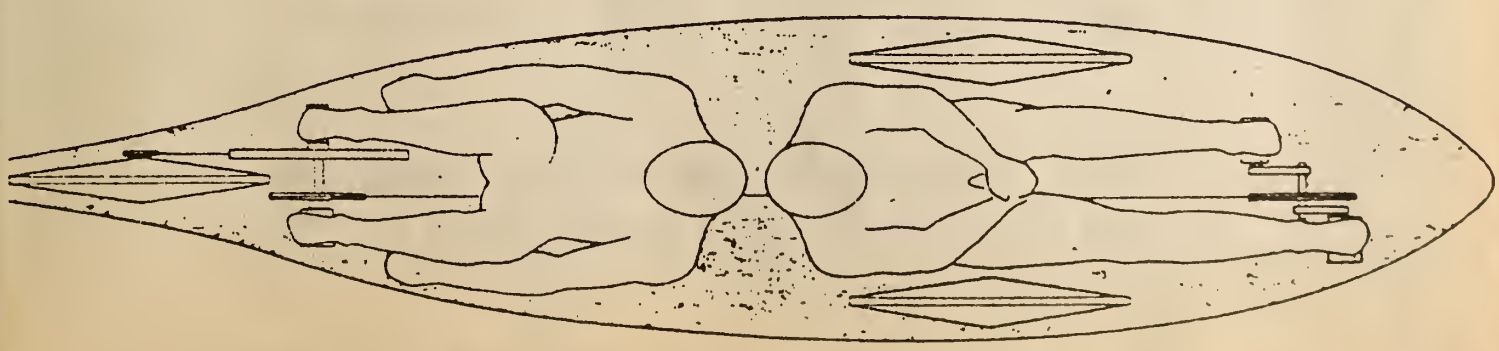
Vector Tandem
fig 1.
(Sci. Amer. December 1983)



Have you got the "Summer's Over" blues?
Well cheer up! It's time to start thinking about the 2nd annual
Engineering Society

Ski Trip

to

Mont Ste. Anne

during Reading Week: Feb. 17-22, 1985

(Sure it's early, but we have to plan NOW!)

This year's trip includes:

- All meals (ie. all breakfasts, lunches and dinners)
- All non-alcoholic beverages
- All transportation (including a visit to Quebec City)
- One five-day lift ticket
- Six day/five night accomodation in Luxury Chalets

Total Cost: $275.

(Only $10 more than last year)

Sign up in the Engineering Society offices (SFB670)

Last year's trip sold out well in advance, so don't put it off until later! !

NO MONEY REQUIRED NOW! !

Your new V.P. Admin

Two things that students probably hear too often in September are "welcome back" and "get involved". The first quote is usually expected from anyone introducing themselves in these pages, but the latter quote has more complex motivations. I'd like to share my thoughts with you about that—but first, I'd like to introduce myself, so you know where it's coming from (and because that is the secondary purpose of this article).

I'm Peter Kurpis, your new Vice President:Administration. You have all had a chance in the last while to read about my job description, so I won't go into too much detail. Generally, I'm responsible for the Engineering Society's day-to-day and long term operations, as well as its business and financial affairs. (Of course, I've got all sorts of people helping me out, so the job sounds more important than it really is.) If you do have any concerns in this area, however, drop by and see me in the Eng Soc.

For the record, I'm presently in fourth year electrical, and, much as I love it, I hope *not* to be here next year. Over the past few years, I've enjoyed many Skule™ events. You might have seen me working bar or security at pubs (as well as exercising my hand-to-mouth coordination), orienting (orientating?) frosh, organizing events for the Electrical Club, and generally relieving myself from the frustratingly lugubrious tedium of midterms, labs and assignments. In second year, I was co-editur of the *Toike Oike*, a serious journal of distinctive humour.

But enough about me; it can get pretty boring reading about what someone else has done. That brings me to the second point of this article. By now, you have been inundated with a wealth of information about what the Engineering Society can do for you—yet have you thought about what you can do for the Engineering Society?

As I mentioned, every group on campus begins its recruiting at the beginning of the academic year. Wherever you go, you are assaulted with cries of "join us, join us, join us!" or "get involved!" or "we need bodies!" but no one seems to tell you why. And, no doubt, you aren't exactly lured by the prospect of sacrificing valuable time and energy to become a faceless entity in this or that committee or organization.

But do you have to sacrifice to help out? Why do it, when there's so much work to be done, and so little time to rest? To start with, it's not much of a sacrifice:we're all in it for fun, to meet new friends, and, I guess, to be able to remember, later on, that university was not just a grind, but a good time. And think of all the time you waste watching TV or just hanging around. So it's not a matter of not having time, or that it wouldn't be fun— it's simply a matter of motivation. Thus, you ask yourself:"Why should I care?"

I'll let you answer that question yourself, by posing a few others. First, why did you

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Engineering Athletics

Betty Dolinar
EAA Publicity Director

The sports season is in full swing and not a moment too soon. We have seen the last of the free and easy days of the first month of school, so what better way to take a break from the problems than to participate in one of the many available sports. If playing the game is not for you, the teams welcome the cheers and encouragement of supporters. To find out game times check the EAA Bulletin Board in the Eng Soc office.

MEN'S ATHLETICS

Rugby

The men's rugby team started the season off with a bang, winning 2 games in the first week of play. They easily defeated Trinity 35-6 in game one and kept up the momentum to win 13-0 over Scarborough. Looks like another exciting season for our rugby team.

SOCCER

Both men's soccer teams have begun their seasons. The Div I team faced a disappointing 2-1 decision against an aggressive St. Mike's team. The game was physical and unfortunately the team suffered several injuries. The lone goal was scored by Renoto Pasqualoni. The team is made up of fairly new, but talented, players who, within the next few games, should develop into a strong and confident team.

The Div III soccer team was also defeated in their first attempt this season, losing 4-0 against a PHE team.

WOMEN'S ATHLETICS

Flag Football

This year, the women are playing flag football rather than touch, as was played in the past. If the first game is any indication, the change is welcomed with open arms. Skule™ out played meds with an outstanding 33-7 victory—scoring more points in a single game than was ever accumulated in an entire season. Points were scored by Pat Bertozzi, Kim Harkness, Laura Money and Teri Morrison. The team fared just as well in

their second game, defeating New College by a score of 6-0, the T.D. scored by Q.B. Joyce Van de Vegte.

SOCCER

The women's soccer team is experiencing a slow start suffering two 3-0 losses against Innis and Erindale. The season, however, has only just begun, and with the experienced players on the team, the team can look forward to an increasingly successful season.

TOURNAMENTS

Be sure not to miss out on EAA's Thanksgiving surprise: The Turket Trot. If your home will be without a turkey this year, then this is your chance to win one. The Turkey Trot is the latest in relay races. It will be held on Firday October 5 around King's College Circle. Each team will consist of 4 runners with a minimum of one woman per team, and each runner will be required to trot, I mean, run half a lap of the Circle. Keep your eyes open for further information that will be posted. (Note: there may be an initial entry fee for each team.)

Also to watch out for is the annual Engineering Touch Football Tournament that will be held on the last weekend in October. Start organizing your class team now.

If the tournaments don't keep you busy enough, consider the following oports to sign up for during the month of October: Men's basketball, volleyball and squash; Women's ice hockey, volleyball and tennis team doubles; Co-ed inner-tube waterpolo and curling.

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come to Engineering? If all you want out of four (of more?) years of engineering is a piece of paper making you eligible for a certain type of job, you've got a problem. Believe me, there are easier ways of doing that—or you're in for one hell of a surprise. Maybe you took engineering with a goal in mind: to improve society, to make the working place safer or more efficient, to give Toronto a better transportation system (the even *better* way?), or maybe even to build a better mousetrap. But don't let that goal make you blind toward other important qualities of an excellent (as opposed to so-so) engineer: the ability to interact well with others, leadership ability, and the know-how of supervising or developing any sort of project. After all, who would you rather work with? A person who is friendly and engaging— or someone who relates best to his calculator? So besides being fun, being a participator can make you, in some ways, a better person, it has its own reward: the knowledge that your efforts may have made several people's day.

After all, there must be something that makes this place better than many other organizations. You *should* care because it's people who care that make the Eng Soc what it is. There are many ways to help out. Participation (that is, just showing up) is the easiest way. If you feel inclined toward helping organize some event, or if you want to make a change in some way, drop by th Eng Soc sometine. Here, you can either talk to someone, or, if you are shy, drop off a note with your name and phone number. Eng Soc offers everything from the only band in the world with on-the-job- training, to sports (at any level), to publications such as the one in your hands, to (of

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President's message

I would like to start this message off by congratulating Kim Harkness and her Gang for running a fantastic Orientation, even though SAC now wants to excommunicate us over that mysterious keg tap acquired during the Scavenger Hunt.

While I have the momentum, congratulations also are due to: Peter Kurpis, who has been apointed the new V.P. Administration; Craig McMunn, the new Speaker of Council; the new committee chairmen, and all the new class reps for first and second year.

My last message was meant as an introduction to both myself and the Eng. Soc. so I would like to use this month's message to fill you in on most of the things that have happended over the summer and during September.

The Engineering Society submitted a brief to the Commission on the Future Development of Universities in Ontario this summer, and on September 15, Dan Gerbec, Nick Iozzo, and I presented this brief to Bovey and Co.. It is generally felt that a lot is going to come out of the Bovey Commission, specifically in the areas of tuition fees, industry liaison, and targetted funding. If you are interested in our submission, or the submission of the Committee of Ontario Deans of Engineering, stop by the EngSoc. They make great bedtime reading.

In order to offer better communication within the Society, we have acquired a computer account on each VAX. Through these accounts, appropriately called "engsoc", we can send mail to everyone in the faculty and anyone with an account can mail messages to us. We also are able to print out banners on this account. If you want to have a message put on the "electronic noticeboard" or would like a banner made up, come and see Ella in the EngSoc.

We have also gained control over the four bulletin boards in the cafeteria. All notices on these boards must now bear the SKULE™ stamp. This is an effort to make these noticeboards less cluttered and to help stop relatively important notices from being buried. Please feel free to rip down, and completely atomize any notices *not* bearing the SKULE™ STAMP.

Remember last month how I said that the Eng. Soc. would be painted and redecorated? Well, it's true. Now, I know that this is a dream come true for most of you, so if you have any ideas, bring them in to Ella, since she is the one who is co-ordinating it all.

As a last note, the upcoming month of October will be a busy one. Through the haze of the dreaded midterms, there are two Varsity Football games, the Homecoming Parade, and the Oktoberfest to keep you sane.

Scite et Strenue
Skillfully and Vigourously

William Hollings

Engineering Stores

LAST DAY FOR TEXTBOOK RETURNS

FRIDAY OCTOBER 12TH!

ENGINEERING *HANDBOOK AND CALENDAR*

STILL AVAILABLE—75¢

SPECIALS:

ACADEMIC YEAR POCKET CALENDAR

$2.50

PENTEL COMBO PACK

$2.25

Includes Rolling Ball pen
Click eraser
Mechanical pencil
Leads

HALO METALLIC MARKERS BY FABER CASTELL

$1.75

Choice of colour

Employment listings

If you are graduating in1985, or it you need a job next summer, you should start looking now. The Career Counselling and Placement Centre operates a programme which can help to get your job search underway. The On-Campus Recruitment Programme involves employers visiting the University of Toronto to interview students for permanent of summer positions that start in May of 1985.

Before submitting application forms, drop by the Career Counselling and Placement Centre to register for the programme. As there is considerable preparation on your part (filling out application forms, reading job descriptions, and doing company research), the earlier you begin, the easier the process will be.

The following list will give you an idea of the companies who are recruiting engineers and the deadline dates for submission of applications.

PERMANENT EMPLOYMENT

COMPANY NAME	APPLICATION DEADLINE
IBM Canada Ltd.	October 5
CTS of Canada Ltd.	October 9
General Motors	October 9
Dept. of National Defence	October 9
Bell Canada - Ontario Region	October 9
Bell Canada - National Systems Group	October 9
Du Pont	October 9
Lutron Electronics	October 9
Northern Telecom	October 9
Fairchild Camera & Instruments	October 9
NCR Canada	October 9
Communications Engineering	October 15
Procter & Gamble	October 15
Trane Company of Canada	October 15
Chevron Canada Resources	October 15
Ontario Hydro	October 15
Dow Chemical	October 15
Canadian Pacific	October 15
Noranda Mines	October 22
Peter Kiewit Sons Co.	October 22
Arthur Andersen - Management Consultants	October 22
Schlumberger International	October 29
McDonald Dettwiler Associates	October 29
Human Computing Resources	October 29
Com Dev Ltd.	November 5
Canadian Fram	November 5

SUMMER EMPLOYMENT

COMPANY NAME	APPLICATION DEADLINE
Bell Canada - Ontario Region	October 9
Bell Canada - National Systems Group	October 9
Gulf Canada Resources	October 15
Suncor Inc.	November 5
Bell Northern Research	November 26

National Research Council

Applications are available for summer positions with the National Research Council.

Transcripts and applications must be mailed direct to Ottawa by November 23.

Forms and information are available at the Summer/Part-time desk.

Calendar

DATE	EVENT	TIME	PLACE
OCTOBER 4	UTCSCE Film	12:00	Vince Volpe Memorial Common Rm.
	By-Law Review Committee	17:00	SF B670
5	Skule™ Cycle	15:00	WB143
9	Eng Soc Executive Mtg.	17:00	SF B740
10	UTCSCE Field Trip	T.B.A.	T.B.A.
11	Faculty Council	17:00	GB202
12	Skule™ Cycle	15:00	WB143
15	Centennial Committee	17:00	WB143
19	Skule™ Cycle	15:00	WB143
	LGMB Reunion	17:00	SUDS Pub
20	Homecoming Parade	10:00	St. George Campus
22	Centennial Committee	17:00	WB143
23	Eng Soc Full Council	17:00	GB202
25	UTCSCE Seminar	12:00	T.B.A.
26	Skule™ Cycle	15:00	WB143
	OKTOBERFEST	20:00	Ukrainian Hall
29	Centennial Committee	17:00	WB143
	CANNON DEADLINE	17:00	SF B670
NOVEMBER 2	Skule™ Cycle	15:00	WB143
	Last Day to Drop Fall Term Courses	16:30	Registrar's Office
	Eng Sci Dinner	T.B.A.	T.B.A.
6	Eng Soc Executive	17:00	SF B740
7	UTCSCE Field Trip	T.B.A.	T.B.A.

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course) social and spirit organizations and events, to organizations intent on more serious aspects of engineering (such as Professional Development), and much more. As well, every discipline has a club you can join. So choose something that interests you, or may develop (hidden?) talents, and—well—go for it!

It's hard to write for such a diverse group:engineers of various desciplines, near-graduates, and those new to it all. But, as a group, we have a reputation on campus for our spirit, and it's people like you that it takes to keep that spirit alive.

So good luck in all your academic endeavours, but remember that there is more to Skule™ than that! Work hard and play hard, and remember that life looks a little rosier looking through the bottom an (emptied) beer glass.

Skillfully and vigourously,
Peter Kurpis

Press Release from the Faculty

The Sandford Fleming Foundation has donated $3,000 to establish a short term loan fund in the Faculty of Applied Science and Engineering at the University of Toronto.

The Sandford Educational Press Loan Fund will provide emergency short-term loans to $100 to $200 to Engineering Undergraduate students. These loans are interest free for at least ninety days.

The Sandford Educational Press is the textbook and publishing division of the Sandford Fleming Foundation and the loan fund was established from the proceeds of sales and its textbooks.

S U D S

A NEW DIMENSION.

BLUE WITH A TWIST.

A new shape of Blue. A new twist-off cap, making your Blue easier to get to. Keep on smiling.

EVERY FRIDAY 4 PM
SANDFORD FLEMING CAFETERIA
THE ONLY PUB ON CAMPUS TO SELL
PREMIUM BEER
AT REGULAR BEER PRICES!